

Clinical Section

Long Standing Pyrexia Due to Hypernephroma

CASE REPORT

By

H. W. RILEY, M.D.

Late Resident in Medicine

Winnipeg General Hospital

Mrs. C., Hebrew, female, age 43.

First admitted to hospital August 29th, 1939.

Entrance Complaints.

1. Weakness and tiredness — 5 months, since February, 1939.
2. Night sweats — 5 months, since February, 1939.
3. Loss of weight, 15 lbs. — 5 months, since February, 1939.
4. Poor appetite — 5 months, since February, 1939.

Her symptoms commenced slowly and almost imperceptibly, and a week prior to admission she consulted a doctor, who told her she was running an afternoon temperature. A review of her systems was completely negative except for the symptoms mentioned. There were no respiratory or urinary symptoms.

Menstrual and marital histories were quite normal, and she had no significant previous illnesses. No tuberculous contacts.

Examination.

A pale, undernourished woman. Weight 101 lbs.

Heart and lungs clinically negative. Blood pressure 125/70.

Abdomen—A slightly irregular mass was palpated in the right upper quadrant. It was about the size of a kidney, freely moveable and could be ballotted between the hands. The examining fingers could be inserted between its upper pole and the costal margin. There was no pain or tenderness.

No enlarged lymph glands.

Neurological examination negative.

Pelvic and rectal examinations negative.

Laboratory Findings.

Urine—Repeatedly completely negative.

Blood—Haemoglobin 60%.

Red Cells 3.86 million.

Colour Index .78.

Leucocytes 9,600.

Differential normal.

Sedimentation 32 mm. in 1 hour.

Index 133.

X-ray Chest—Negative.

Tuberculin Test 1:1,000—Negative.

B.M.R.—10.

Stools—Repeatedly negative for occult blood.

Blood Culture—Negative on several occasions.

Agglutination Tests—Positive to 1/160 for Typhoid H.

Negative for Typhoid

O, Paratyphoid and

Undulant.

Skin Test for Undulant Fever—Negative.

Wassermann—Negative.

Spinal Fluid—Negative.

Intravenous Pyelogram—The right kidney, while functioning normally, appeared to be displaced downwards and rotated. The calyces had a peculiar appearance, attributed to external pressure.

Right Retrograde Pyelogram suggested ptosis of the kidney with dilatation of the major calyces and blunting of the minor, with a kink in the ureter at the uretero-pelvic junction. The possibility of a displacement by a retro-peritoneal tumour was suggested.

Catheterized specimens from the right ureter were negative and culture revealed no organisms.

Clinical Course.

From the day she entered hospital, the patient ran an intermittent temperature, having a consistent afternoon rise to 99 or 100. She developed no new symptoms, but her anorexia and weakness increased.

In conjunction with the Urological Department, it was decided that a right hypernephroma was a real possibility, and an exploratory operation was planned and slated. The patient, however, wished to go home for a few days and was discharged on September 20th, 1939, to return shortly for operation.

Readmitted January 21st, 1940.

Entrance Complaints.

1. Weakness and anorexia, as before, since February, 1939.
2. Further loss of weight, 18 lbs., since September, 1939.
3. Pain in Right Lower Quadrant, since January 16th, 1940.

Following her discharge in September, 1939, the patient went elsewhere, where she was investigated, and a laparotomy was finally performed. A subsequent report stated that the abdominal exploration was essentially negative except for—

1. The gall-bladder, which was found to be filled with stones, and which was removed.
2. A biopsy from the liver tissue which revealed cloudy swelling and the presence of intracellular bile pigment, and

* From the Departments of Medicine and Surgery, University of Manitoba, and The Winnipeg General Hospital.

3. By palpation the right kidney seemed ptosed and markedly rotated. There appeared to be a somewhat rounded area on the lower pole of the right kidney which the operator felt could not be interpreted as a tumour.

After her operation there was no change in the patient's subjective symptoms until 5 days prior to admission when she developed an aching pain in her right upper quadrant. This was not severe and was constant with no food or effort relationship. It did not radiate. Review of systems still negative.

Examination.

No change except for increased emaciation, and an upper right rectus scar. The mass in her upper right quadrant resembling a ptosed kidney, was still present but did not appear to be increased in size. It was slightly tender on pressure, and seemed a little irregular.

Laboratory Findings.

Blood—Haemoglobin 57%.

Leucocytes 12,000.

Differential normal.

Urine—Negative on numerous occasions.

Barium Series—Revealed nothing beyond a general ptosis.

X-ray Chest—Negative.

Cystoscopy—Negative.

Right Retrograde Pyelogram—Suggested a downwardly displaced and outwardly rotated kidney, presumably due to an extrinsic cause. This pyelogram was sent for comparison with the plates that were taken prior to her operation and the opinion was expressed that "this pyelogram demonstrates that there is no organic pathology in the kidney itself."

Duodenal Drainage—Negative.

Sternal Puncture—No abnormalities in haemopoiesis.

Clinical Course.

She continued to run a temperature rising to 100 or 101 daily.

By March 19th, 1940, her Haemoglobin had dropped to 53%, with a colour index of .7. Her general condition was unimproved. After considerable discussion, at which a variety of opinions were expressed, it was decided to proceed with an exploration of the right kidney.

The patient was transfused and operation performed on March 26th, 1940. The right kidney was exposed retro-peritoneally and was found to be rotated markedly. There were many large veins on the surface and attached to its anterior surface, just below the centre, was a round raised tumour, almost two inches in diameter. The kidney was removed. The cut surface of the tumour was smooth and pink at the periphery and necrotic in the centre. There appeared to be

no involvement of the renal pelvis, but the renal vein was markedly infiltrated. Microscopic examination revealed a typical hypernephroma.

The patient made a good post-operative recovery. Her temperature reached normal on her fifth post-operative day and remained normal until her discharge from hospital on April 17th, 1940. X-ray chest on April 15th, 1940, showed no evidence of metastases.

Follow-up.

May 15th, 1940. Patient felt much better following her operation and gained 10 lbs. Her temperature was normal. On May 10th, 1940, she developed a pain in her lower left chest, aggravated by breathing. No other complaints.

X-ray Chest—May 17th, 1940. There is a homogenous density in the left base with obliteration of the costo-phrenic angle. This change is presumably of metastatic origin.

Summary.

A case of Hypernephroma is reported in which the only symptoms for nearly a year were progressive anorexia and loss of weight, accompanied by an intermittent fever. The diagnosis was rendered difficult because of the lack of characteristic radiological findings, and because the possibility of a renal tumour had been rendered less likely by an apparently negative abdominal exploration performed six months after the onset of symptoms. Although the tumour did not invade the renal pelvis, and there were at no time any urinary symptoms, the significance of the involvement of the renal vein is demonstrated by the development of a pleural effusion a month after the operation, in spite of a marked improvement in her general health. The frequent association of pyrexia with an area of necrosis in a hypernephroma is again noted, though the significance of this association is still sub judice.

A Post Anesthetic Report Upon General Surgery For One Year at the Winnipeg General Hospital

by D. C. Aikenhead, M.D. (Man.)

The following survey is a "follow-up" of 3,549 surgical operations performed at the Winnipeg General Hospital from August 28th, 1938, to a similar date in August, 1939. During this period there were some 800 very short operations in which an inhalation anaesthetic was used and these are not included in this survey. It might be noted that the average time for these 3,549 operations was fifty-nine minutes.

These operations include a wide variety of surgical risks. The range in age was from an infant three days old to an elderly man of ninety-two years. The types of operations included many perforated duodenal ulcers, ruptured appendices, strangulated herniae, ectopic pregnancies and cerebral tumors with high intra cerebral pressure. Almost all types of patients are met in a busy surgical service within a year's time.

Mortality. There were seventy-one deaths in 3,549 operations, giving a mortality of two per cent. These deaths all occurred in hospital. One fatality was two and one-half months following surgery. No attempt was made to keep track of a patient after leaving hospital.

Anesthesia. 2,132 patients or forty-nine per cent. had ether by semi-closed method. Ether is an excellent anaesthetic agent and probably the safest inhalation drug we possess.

Gas. 1,316 patients or twenty-nine and one-half per cent. had gas anesthesia. Of this figure, ninety-five per cent. would be cyclo-propane. We are very fond of cyclo-propane and use it whenever possible in inhalation anesthesia unless profound muscular relaxation is desired. Any patient who shows cardiac irregularities or a persistent rise over normal blood pressure with the higher concentrations of cyclo-propane is switched to some other anesthetic agent. These cases are very few in number.

Spinal. 801 operations were performed under sub-arachnoid block or "spinal anesthesia" giving a percentage of 18½%. The year 1939-40 will show a higher percentage of "spinals" for abdominal surgery. Muscular relaxation in abdominal surgery is more satisfactory to the surgeon under "spinal" than inhalation anesthesia. Post-operative morbidity and mortality of "spinal" and inhalation anesthesia is about the same following operations of equal gravity.

Avertin or Tribromethanal. This rectal anesthetic is the anesthetic of choice in cranial surgery.

Pentothal or Thiothal. This is a very satisfactory intravenous anesthetic for any non abdominal operation under a half hour's time.

There is no "best" anesthetic. With the many excellent anesthetic agents available, at present the use of one, or more than one agent to fit the patient's condition would seem to be the ideal.

Patients suffering from pulmonary tuberculosis requiring surgery do better with infiltration, spinal, or intravenous anesthesia rather than inhalation anesthesia. One may combine the former three types of anesthesia upon one patient if required.

Patients with a history of migraine or any severe irregular or periodic headache or a definite cerebro-spinal lesion should not have a "spinal" anesthetic.

Pulmonary Morbidity. Respiratory Major refers to a broncho-pneumonia or frank pneumonia. Respiratory Minor points out a post-operative atelectasis. This condition may lead to a Major pulmonary lesion but as a rule subsides within four days.

Post-Operative Catheterisations. Patients who had appendectomies and herniotomies under

"spinal" were catheterised more frequently than similar operations under inhalation anesthesia. In percentage the figures are as follows, "spinal" 41% and inhalation anesthesia 27%.

Intra-Tracheal Tubes. The use of intra-tracheal tubes in inhalation anesthesia with certain resistant patients changes a difficult anesthetic to one under full control of the anesthetist, plus markedly improved muscular relaxation for the surgeon. In a series of over 300 abdominal operations with intra-tracheal tubes the pulmonary morbidity was neither above or below the average. We think that the benefit of an intra-tracheal tube greatly outweighs the possible risk of its use.

In addition to pulmonary complications the following incidents should be noted: (a) Three "sore eyes"—which caused more discomfort to the patient than did the original operation.

- (b) One severe reaction to morphin with a good recovery.
- (c) Three patients had hiccoughs for over twenty-four hours.
- (d) One patient had marked mental aberration for 24 hours.
- (e) Eight patients had a "heart attack" at varying periods following their operation. These attacks without mortality lasted from a few minutes to three hours. Pallor, drop in blood pressure, and mental anxiety were the chief symptoms.
- (f) Four patients abdominal wound "broke open." These wounds were resutured without further trouble.
- (g) Pains in the legs following spinal anesthesia. Six patients come under this heading; four were punch prostatectomies.
- (h) Surgery during pregnancy. Three patients had resection of the thyroid gland and five patients had their appendix removed. None of these operations interfered with the normal course of pregnancy.
- (i) Gastric surgery—The eighty-one stomach operations included eleven gastric resections all over two hours in length and ten gastric perforations with two deaths.

"Comparisons are odious." It is difficult to get a series of surgical operations where the conditions of surgery are identical. It would seem to me looking backward over a period of twenty years that while mortality figures are not improving in a startling way, the gravity and age limit of surgery has been markedly stepped up within this period. At present heavy operations upon aged people are not exceptional. In this series the combined ages of three patients was two hundred and sixty-two years.

Two factors that have changed the post-operative morbidity and mortality in surgery are the use of pure Carbon Dioxide and "Nasal Suction." The former used at least three times per day to produce a brief hyperpnoea reduces the danger of atelectasis following surgery. The use of "Nasal Suction" following heavy abdominal operations would seem to me to be the greatest single surgical advance in the past twenty years.

I wish to express my appreciation to various house doctors for help rendered during the year. To Dr. Donald Huggins who spent considerable time in collecting material for this survey and valuable aid in compilation of end results I would also tender my hearty thanks. Finally, all sins of omission and commission are my own.

TRY PABLUM ON YOUR VACATION

Vacations are too often a vacation from protective foods. For optimum benefits a vacation should furnish optimum nutrition as well as relaxation, yet actually this is the time when many persons go on a spree of refined carbohydrates. Pablum is a food that "goes good" on camping trips and at the same time supplies an abundance of calcium, phosphorous, iron, and vitamins B and G. It can be prepared in a minute, *without cooking*, as a breakfast dish or used as a flour to increase the mineral and vitamin values of soups and standard staple recipes. Packed dry, Pablum is

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Gall Bladder	168	70.5	.30	74	44%	7	4	2	4%
"Punch" Prostat	145	50				6	1	3	4%
Thyroid Surg.	238	41	.012	6	.02	3	1	3	1.2%
Intestinal	98	73mins.	.24	12	12%	13	2	3	12%
Stomach	81	77	.38	25	30%	7	1	3	8%
Kidney	63	71	.23	1	.014	3	2	1	4%
Abd. Perineal	7	116		1	.14	1			14%
Head and Neck	100	56		9	9%	2			2%
Herniae	190	61	.32	5	.027		1	2	
Craniotomy	67	114		12	.17	6			8.9%
Appendectomy	494	44	.24	20	.04	5	3	4	1%
Haemorrhoids	182	40	.38	1	.005				
Breast	111	59mins.	.03	1	.009		1		
Other Pelvic	148	60mins.	.42	31	.20	1	1	2	.6%
Lap-Vag.	142	95		18	.12	1		3	.7%
Cervix-Uter.	293	41		2	.006	2		4	.6%
Caes. Section	23	64	.26						
Limbs	566	48	.03	15	.026	4		4	.7%
Miscellaneous	313	47	6	35	.11	10	2	5	3%
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 sanctioned by the Manitoba Medical Association*

New and Old Uses for Prostigmine

Prostigmine, that gentler relative of physostigmine, is still acquiring new therapeutic laurels. The writer happened to be present at a meeting of the Royal Society of Medicine in London in 1934, when Miss M. Walker announced her discovery of the miraculous effect of prostigmine on myasthenia gravis. Its use in this condition both for diagnosis and for treatment has been amply confirmed in the succeeding years. The chief drawback is the cost. The 15 mgm. tablets cost about ten cents each and a myasthenia gravis patient may need up to six tablets a day, although by the judicious use of benzedrine as an adjuvant the dosage can often be reduced. Prostigmine is supposed to act by delaying the destruction of acetylcholine by choline esterase at the neural end-plate.

Prostigmine for Ileus

1 c.c. ampules containing 0.5 mgms. of prostigmine (costing thirty-five cents each) have been used four-hourly with success for the prevention or the treatment of ileus and gas pains. The effect of treatment can be followed by counting the number of intestinal sounds heard by minute by stethoscope. Twenty per minute is normal. Six or under indicates ileus. A rising count is a good omen. In view of the fact that some myasthenia patients taking the 15 mgm. tablets orally get diarrhoea, it would seem logical to try the administration of the cheaper oral tablets in post-operative cases capable of absorbing the drug, before resorting to injections.

Prostigmine in Peripheral Vascular Disease

A new use for this drug is described by Perlow in the Jour. Amer. Med. Assoc. 1940, Vol. 1, p. 1991. This time the spearhead of the attack is not the voluntary muscle neural end-plate, nor the involuntary gut muscle neural end-plate, but the vasomotor end-plates. Prostigmine has been used successfully in Raynaud's disease, thrombo-angitis obliterans, and arterial embolism. An hour and a half after the subcutaneous injection of 0.5 mgms. of prostigmine in twenty cases of the first two conditions, the skin temperature in the affected extremities was elevated an average of three degrees Centigrade. The patients were kept on 15 mgms. of prostigmine orally thrice daily for some weeks. Five out of nine Raynaud cases lost their attack of vasospasm while under treatment. Seven out of eleven thrombo-angitis obliterans patients improved in their walking distance, and one healed some chronic ulcers. One patient with a left iliac artery embolism had the cyanotic area recede from mid thigh to below the knee, four hours after an injection of prostigmine diminished the spasm in the collateral vessels. The author states that if cramps and diarrhoea are caused by a large dose of prostigmine 1/100 gr. atropine under the tongue will bring prompt relief. Prostigmine was not found to be of benefit in four cases of arteriosclerotic vascular disease and in five cases of acrocyanosis.

Prostigmine Test for Pregnancy

The newest use for prostigmine is recorded by Soskin and others in the Jour. Amer. Med. Assoc. 1940, Vol. 1, p. 2090. Twenty-five non-pregnant women with periods delayed from three to thirty-five days had their periods start in from one half hour to seventy-six hours (average 24) after one to three daily injections of 1 or 2 cc. of prostigmine. There were no failures. The prostigmine is supposed to cause a hyperaemia of the uterus by arterial relaxation. Twenty-three pregnant women suffered no abortions from similar injections. Hence, lack of response to prostigmine in a woman whose period has not come, is evidence of pregnancy.—F.G.A.

♡ ♡ ♡

NEW HONOR FOR DR. G. S. FAHRNI

At the meeting of the Executive of the Manitoba Medical Association on June 3rd, Dr. W. S. Peters reported that the Nominating Committee had been unanimous in selecting Dr. Gordon Fahrni as the nominee for President-Elect of the Canadian Medical Association for 1941. At the Toronto meeting of the Canadian Medical Association Dr. Fahrni was elected.

Heartiest congratulations are in order at this signal honor!

♡ ♡ ♡

Dr. W. E. R. Coad has been appointed acting secretary of the Manitoba Medical Association until the Annual Meeting. Address all communications to the Secretary, Manitoba Medical Association, 102 Medical Arts Building, Winnipeg.

Personal Notes and Social News

Conducted by Gerda Fremming, M.D.

Dr. Leslie P. Lansdown, of Pine Falls, Man., left at the beginning of the year to join Number 5 Base Hospital Staff and has been overseas since the end of January. He has been a member of the R.C.A.M.C. for several years. Mrs. L. P. Lansdown is now residing in Winnipeg.

♡ ♡ ♡

Dr. and Mrs. J. H. Moir, of Gods Lake, Man., are receiving congratulations on the birth of a son (Brian Michael).

♡ ♡ ♡

Dr. and Mrs. Gilbert Adamson are taking a month's vacation by motor. Banff and other mountain resorts are on their itinerary.

♡ ♡ ♡

Dr. Clair William Hall, elder son of Mr. and Mrs. Clarence Hall, of Winnipeg, was united in marriage to Isabelle Maude, only daughter of Mr. and Mrs. James Pennock, of Boissevain, Man., on June 8th. After the ceremony Dr. and Mrs. Hall left for the south.

♡ ♡ ♡

Dr. Lois Kennedy, of Murfreesboro, Tenn., is visiting in Winnipeg for a month and renewing acquaintances.

♡ ♡ ♡

The engagement of Jean Margaret, only daughter of Mr. and Mrs. H. G. Prior, of Portage la Prairie, Man., to Dr. Brian Desmond Best, of Winnipeg, son of Dr. and Mrs. R. M. Best, of Killarney, Man., has been announced. The wedding will take place at the end of June.

♡ ♡ ♡

The engagement of Dr. Donald F. McIntyre, Jr., of Winnipeg, to Miss Nancy Martin, only daughter of Mrs. C. J. Martin, of Winnipeg, is announced and will be solemnized in the autumn.

♡ ♡ ♡

Dr. Richard Roy has been appointed municipal doctor for the Municipality of Riverside, with headquarters at Dunrea, Man.

♡ ♡ ♡

The Association extends its deepest sympathy to Dr. and Mrs. C. C. Everson, of Morden, Man., on the loss of their daughter, Muriel, in a motor accident.

♡ ♡ ♡

Dr. Gerald S. Williams, Superintendent of the Children's Hospital, Winnipeg, has left for London, where he will take up administrative work with the R.C.A.M.C. Dr. Williams occupied a similar position during the war of 1914-18.

Dr. Francis Russell McManus, only son of Mr. and Mrs. Francis J. McManus, of Kenora, Ont., was united in marriage in All Saints' Church June 12th to Mary Eileen Reaveley, second daughter of Mr. and Mrs. E. W. M. James. Their honeymoon will be spent at the Lake of the Woods.

♡ ♡ ♡

Dr. Anna Wilson recently returned to Winnipeg after a year's absence in the Old Country. For 5 months she was in charge of a maternity centre, established for evacuated London women in Slough, Buckinghamshire. Later she took post-graduate work in Obstetrics and Gynaecology in London and at the Royal Infirmary in Edinburgh. Before going to England she visited the Scandinavian countries. Dr. Wilson is now located at 303 Medical Arts Building.

♡ ♡ ♡

The members of the Winnipeg Medical Golf Association had a very enjoyable afternoon at their monthly tournament held Wednesday, June 12th, on the beautiful links of the Pine Ridge course. There was a good turnout. With a mixture of scientific playing and the favoring of some by her gracious majesty "Lady Luck," the competition was keen and all members had a good time.

♡ ♡ ♡

The next monthly tournament will be held on Wednesday, July 10th, over the popular Southwood Country Club course. We suggest that all members who have not as yet brushed last year's dust off their clubs do so for this tournament. Arrange a twosome or foursome now and be there ready to tee off between 1.00 and 2.00 o'clock. A full attendance is requested.

♡ ♡ ♡

Dr. R. O. McDiarmid, of Brandon, was the winner of the championship flight, over a field of fifty-nine golfers in a tournament held at Souris, Man., June 25th. The proceeds were given to the Athletic Patriotic Fund. Congratulations, doctor.

♡ ♡ ♡

If the scores of good wishes and kindly thoughts from his many friends were a rejuvenating factor, Mr. J. L. Hewitt (Jim to the majority of us) would recover from his present illness with rapidity. We are pleased to state that Mr. Hewitt is making favorable progress on the road back to health, and we trust that the genial smile we have missed for so many weeks around the Medical Business Bureau will be back with us again in the very near future.

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TYPHOID FEVER IN MANITOBA

At this time of year when vacations are being planned, camping and picnicking being done, and the "Call of the Wild" in full voice, it might be of interest to spend a few minutes of thought regarding our old enemy, Typhoid Fever.

Typhoid Fever is an acute specific communicable disease of humans, due to the typhoid bacillus, and occurs in nature in humans only. It has been transmitted experimentally to anthropoid apes (by Metchnikoff and Besredka in 1900), but has not been found occurring naturally excepting in humans. It is an entirely preventable disease, but it will only be by a concerted and concentrated effort that we may wipe it out. Rosenau states, "Typhoid is not a 'vanishing disease'—the menace is ever with us." Bearing this in mind, we must never relax in our vigilance against this infection.

Typhoid varies greatly in severity from the mild ambulatory type to the severe toxic type which is usually fatal. The symptoms are quite inconstant. Probably the most constant are prolonged fever, loss of appetite, headache and general weakness. These may be accompanied by diarrhoea, abdominal pain or discomfort and rose spots.

The bacillus enters the body through the mouth and attacks the lymphatic system, spleen and bone marrow. The lymph nodes in the intestine are probably attacked first and as they become ulcerated may cause intestinal haemorrhage. The bacilli are found in the blood stream early in the course of the disease—consequently a blood culture at this stage is of much more value than an agglutination test which may not be positive even ten days after the onset. A leukopenia is also an early symptom. As the infective organisms leave the body mainly via the bowel and kidneys, the value of careful examination of the faeces and urine is apparent. The bacilli appear in the faeces early in the course of the disease—sometimes before the fever. They appear in the urine about the second or third week. They may also be present in the saliva and other discharges from the body, but this is not the common method of egress. As the agglutinins appear in the blood the bacilli disappear from it—this fact should be borne in mind when making a decision as to what tests should be performed. Careful inquiry as to the date of onset is therefore of great value in deciding what tests to do and also in evaluating the reports of such tests. The incubation period is variable but is most commonly ten to fourteen days.

Typhoid has a world-wide distribution, is pandemic, endemic and frequently epidemic. Epidemics vary from a few cases to a great many. Where sanitation is poor typhoid flourishes best. Normally it is a warm weather disease, but epidemics due to food infections may occur at any time of year.

Typhoid is no respecter of persons—it attacks all ages, rich or poor, strong or weak, male or female, but has its greatest prevalence among children, but its highest fatality in early adolescence. The case fatality rate varies very little and averages about 10%. Convalescence is slow, and the patients' resistance to other diseases is apt to be low for even a period of years.

History of Typhoid

A word or two as to the history of Typhoid. Typhoid was confused with many other fevers for hundreds of years. In 1643 Thomas Willis described an epidemic of it that occurred in Parliamentary troops. In 1826 Bretonneau described it clinically, and in 1829 Louis named it typhoid fever to distinguish from typhus fever. William Budd in 1856 showed that the infection was transmitted by the patients' excreta. In 1880 Eberth saw the bacillus in the tissues, and in 1884 Gaffky grew it in pure culture. In 1894 A. E. Wright gave inoculations of dead typhoid bacilli (vaccine) subcutaneously to British soldiers as a prophylactic, but it took another ten years to establish its value. In the first World War it showed its great value by protecting the immense numbers of soldiers.

Carriers

The typhoid bacillus enters the body by the mouth. It attacks the gastro-intestinal tract, passes into the blood and so invades the body. The bacilli leave the body mainly in the faeces and urine, occasionally in the sputum and other discharges. They appear in the faeces early in the disease and usually disappear during convalescence but may remain for years, and the person is then spoken of as a carrier. About 11% of cases are carriers for 8 to 10 weeks and are known as convalescent carriers. From 2% to 4% remain as permanent or active chronic carriers. Occasionally typhoid bacilli are found in the stools of persons without a clinical history of typhoid. These are passive carriers and are rare. We found two of them in the recent Manitoba epidemic. They are the most difficult to locate and for that reason the most dangerous. Women seem to outnumber men as carriers, and this is thought to be due to the fact that they are more subject to inflammation of the gall bladder, and the gall bladder is the favorite hiding place for typhoid bacilli. Carriers may be either of the fecal or urinary type, but the former are much more frequent and most difficult to clear up. Cholecystectomy will clear up some of them but not all. Urinary antiseptics will clear up most of the urinary type. Some carriers are more dangerous than others, chiefly due to careless personal habits, opportunity to infect water, food and dishes, and to the virulence and number of the bacilli. Carriers may discharge bacilli regularly or intermittently.

Methods of Infection

Knowing that typhoid is a disease of humans alone, then we realize that infection comes only from cases and carriers in their excreta, and may infect others by direct or indirect contact. Direct by intimate contact—indirect through infection of water, milk, milk products, oysters, raw vegetables, and also by flies, fingers and fomites. The four "F's" supply the complete chain—Faeces—Fingers—Flies—Food. Dishes, bedding, underwear, etc., may supply the mode of conveyance from one to another.

Water borne typhoid is a common occurrence. The bacilli may live for some time in water but do not multiply in it. They tend to die in a few days, but may even withstand freezing. As most faeces usually finds its way into water, the possibility of contamination of surface water, swimming pools, and improperly constructed wells is common. The value of chlorination and sanitary control of water supplies is obvious. Ice from untreated water may be dangerous.

Milk and milk products have caused many epidemics as the ease of infection by a carrier working as a milker or milk handler is easily seen. The bacilli not only live in milk but also multiply in it. It must be remembered that heat destroys the typhoid germs, so pasteurization of milk and proper handling after pasteurization renders it safe. When an outbreak is due to milk or milk products it has always been raw milk. Outbreaks due to milk or water are apt to be of an explosive character. Montreal, in 1927, had the largest epidemic on record due to milk borne infection. There were 5,014 cases reported with 488 deaths. Cream, buttermilk, and new cheese have all been the cause of epidemics.

Oysters, mussels, and shellfish from polluted waters have also caused epidemics.

Fruits and vegetables may be infected by fingers or from night soil used as fertilizer, and if not cooked may cause cases.

The common house fly may carry the infection on its feet or in its excreta as it lives, feeds and breeds in faecal matter. This has been proven, and it is easily seen how the infection can be conveyed to food, dishes, fingers and even lips. Dust may rarely cause infection, but as drying destroys the infection it is not very probable. Soil infected with moist sewage may remain infective for a considerable time.

Linens, towels, blankets, etc., freshly infected by a case or carrier, unless properly disinfected, may easily cause infection of those handling them, such as laundry workers and nurses.

Contact infection is the result of close association and may take place in many ways such as kissing, soiled hands, remnants of food, thermometers, tongue depressors, dishes, towels, etc. This is the cause of secondary cases and some sporadic cases.

Methods of Control

Typhoid can be controlled, and perhaps eventually wiped out:—

- (1) By the proper care and control of cases and carriers. This may be achieved by sterilization with chemicals of body discharges and their proper sanitary disposal. Disinfection of linen, exclusion of flies from the sick room and scrupulous personal hygiene. Cases and carriers must be reported and records kept of them. Carriers must not engage in occupations such as cooks or food handlers where they may be a danger to others. All cases and carriers must be educated as to why they are dangerous and how to avoid infecting others.
- (2) By assuring a properly controlled, uncontaminated, treated water supply, and using only pasteurized milk.
- (3) By proper sanitary disposal of all human excreta and coupled with this I shall place fly control by destruction of their breeding ground and proper screening of our windows, doors—swatting and spraying.
- (4) By scrupulous personal hygiene, such as always washing our hands after being to the toilet, and again before handling, preparing or eating food and handling dishes or cutlery for others. Using only individual towels, wash cloths, personal articles, etc.
- (5) By the use of typhoid vaccine in areas where typhoid is prevalent or before going on camping trips, etc., where we are not assured of safe water, milk and food supplies. Nurses, doctors, laundry workers, plumbers, sewer workmen, etc., should all be protected by vaccine. It must be remembered that immunity due to vaccine is not lasting, is highest after one year and not sure after two years unless further doses are given. One attack of typhoid protects for life.

Each case should be traced so as to prevent further harm from the same source. Careful investigation is invaluable. Every case must be reported so that investigation may be made and proper precautions taken. One missed case may be the focus of infection for an epidemic, and that is where the danger from mild or ambulatory typhoid comes in. All suspected cases should be treated as cases until proved otherwise.

The prevention of typhoid fever may be summed up in the word cleanliness—physical and biological cleanliness.

What is the Typhoid Problem Here in Manitoba?

Up to 1914 typhoid in this Province was a very serious problem. In that year there were 66 deaths reported due to it, which represents about 660 cases. From then on it gradually decreased until 1930, and since then has remained at a more or

less constant level until 1939 we had an epidemic of 50 cases at Selkirk making a total of 132 cases and 15 deaths for the year. On account of the epidemic in Ste. Anne and St. Boniface we have had in the first five months of 1940 108 cases and 9 deaths. These figures are far from pleasing.

In 1909 there were 197 deaths from typhoid reported in Manitoba, so there must have been about 2,000 cases in that year, as the case fatality rate has always remained quite steadily at about 10%. Consequently it can be quite easily seen that in the 30 years from 1909 to 1939 there has been a decided decrease in the number of cases. Our best year was 1937 when only 44 cases were reported and 9 deaths. Probably some cases were not reported as 9 deaths would usually mean 80 to 90 cases.

Since 1918 we have kept fairly complete records of cases and deaths reported by cities and rural areas. On studying these we find that the improvement for the Province as a whole is mainly due to a decided decrease in the number of cases in our cities and this was coincidental with the provision of controlled and treated water supplies and of proper sewerage systems with water closets instead of the old pit privies and indiscriminate sewage disposal.

The rural areas show an average of 9.2 deaths per year for the 1930-39 period, whereas they showed an average of 17.8 deaths per year in the 1920-29 period. (Deaths are reported more completely than cases, and as the case fatality rate varies very little I am quoting figures for deaths rather than for cases). These figures, therefore, show that even in the rural areas the number of cases and deaths have been cut nearly in half. But the cities show only an average of 3.4 deaths per year in the 1930-39 period and showed an average of 11.5 deaths per year in the 1920-29 period, so while the rural area has cut to nearly one half, the cities have cut to nearly one quarter. Up to 1929 the cities had nearly as many typhoid deaths as the balance of the Province, but in the last ten years they have only had a little over one third as many.

These figures are quite easily understood when we consider the unprotected wells, the unsanitary privies (or even total lack of them), the countless number of flies, etc., in the rural areas, coupled perhaps with considerable lack of knowledge re sanitation and prevention of disease, and compare these conditions with a controlled and treated water supply in the cities, proper sewage systems with some form of sewage disposal, few flies due to lack of breeding grounds (garbage and manure, etc.), and perhaps better knowledge of, and facilities for proper personal hygiene.

This can be remedied by education along hygienic lines. Not one person, nor ten persons, nor one hundred can wipe out typhoid, especially in rural areas, but a concerted and prolonged effort by everyone can, and we hope will! It must be remembered that as our case incidence goes down

so does the number of our foci of infection die out, but on the other hand, when our incidence goes up our foci are multiplied. Consequently, after an epidemic, we must be doubly on our guard. It behooves us all to be on the watch and to do everything we can to improve sanitary conditions and to prevent Typhoid Fever.

Prevention assures dividends in stronger, healthier, happier people!—M.B.

COMMUNICABLE DISEASES REPORTED

Urban and Rural — April 23 - May 20

Measles: Total 2,001—Winnipeg 726, Brandon 274, Kildonan East 145, St. James 138, Unorganized 103, North Norfolk 65, St. Boniface 63, Kildonan West 59, Selkirk 31, St. Clements 29, St. Andrews 27, Woodlands 25, Brooklands 21, Carman 21, Clanwilliam 21, Rockwood 16, Bifrost 15, Ritchot 14, Strathclair 12, Springfield 8, Wallace 8, Rosser 8, Thompson 8, Fort Garry 7, St. Vital 6, Franklin 6, Coldwell 4, Louise 4, Portage Rural 4, Neepawa 3, Archie 2, Argyle 2, Cartier 2, Eriksdale 2, Minnedosa 2, Montcalm 2, Oak Lake 2, St. Paul West 2, Shellmouth 2, Silver Creek 2, Whitewater 2, Brenda 1, Cypress North 1, Hartney 1, Oakland 1, Portage City 1, Ste. Anne 1, Saskatchewan 1, Stonewall 1, Transcona 1, Tuxedo 1, Whitehead 1, Langford 1 (Late Reported: Roland 35, St. Francois Xavier 24, St. Boniface 10, Woodlands 10, Brandon 3, Cartier 2, Carman 2, Archie 2, Rosser 2, Wallace 2, Unorganized 1, Louise 1, North Norfolk 1, Teulon 1).

Whooping Cough: Total 175—Winnipeg 58, St. Boniface 31, North Norfolk 9, Selkirk 8, Brandon 7, Melita 5, Arthur 4, Portage City 3, Lawrence 3, Glenwood 3, Brooklands 2, Brenda 1, Ritchot 1, Rhineland 1, Stanley 1, Stonewall 1 (Late Reported: Brandon 14, Unorganized Territory 8, Cartier 5, St. Vital 3, Stanley 2, Swan River 1, Glenwood 1, North Norfolk 1, Portage City 1, The Pas 1).

Chickenpox: Total 121—Winnipeg 104, St. Boniface 6, Montcalm 2, Birtle Rural 1, Boissevain 1, Brandon 1, Ellice 1, Portage Rural 1, The Pas 1, Transcona 1, Tuxedo 1, Unorganized Territory 1.

Scarlet Fever: Total 64—Winnipeg 26, Gilbert Plains Rural 7, St. Boniface 4, Harrison 4, Tuxedo 4, Bifrost 2, Strathcona 2, Thompson 2, Brandon 1, Montcalm 1, Portage City 1, Portage Rural 1, Roblin Town 1, St. James 1, Ste. Rose du Lac Village 1, Sifton 1, Springfield 1, Westbourne 1 (Late Reported: Gilbert Plains Village 1, Gilbert Plains Rural 1, St. Boniface 1).

Tuberculosis: Total 41—Winnipeg 19, Brandon 2, St. Andrews 2, Assiniboia 1, Cypress North 1, Dauphin Town 1, Dauphin Rural 1, Dufferin 1, Eriksdale 1, Grandview Town 1, Lorne 1, Portage City 1, Rosedale 1, Ste. Anne 1, St. Vital 1, Shell River 1, Stonewall 1, Swan River Town 1, Thompson 1, Unorganized Territory 1, Woodlea 1.

Mumps: Total 29—Winnipeg 17, St. Boniface 6, Kildonan East 3, Napinka 2, Harrison 1.

Diphtheria: Total 29—Winnipeg 8, Hanover 6, Ellice 4, Unorganized Territory 3, Ste. Anne 2, The Pas 1, St. Boniface 1, Ritchot 1, Coldwell 1 (Late Reported: Hanover 1, Unorganized Territory 1).

Influenza: Total 18—Unorganized Territory 1 (Late Reported: Mossey River 1, St. Clements 1, Virden 1, Woodworth 1, Cypress North 1, Dauphin Town 1, Norfolk South 1, Rhineland 1, Rosedale 1, St. Vital 1, Shoal Lake Village 1, Shellmouth 1, Silver Creek 1, Turtle Mountain 1, Wallace 1, Harrison 1, Rockwood 1).

Typhoid Fever: Total 12—St. James 1 (Late Reported: Hanover 4, St. Boniface 3, Rosedale 1, Ste. Anne 1, Lac du Bonnet 1, St. James 1).

Pneumonia (Lobar): Total 9—Unorganized Territory 3, McCreery 2, Ste. Rose Rural 1 (Late Reported: Unorganized Territory 1, Rossburn 1, St. Clements 1).

Erysipelas: Total 6—Winnipeg 3, Tuxedo 1, Brandon 1, Roblin Town 1.

Diphtheria Carriers: Total 2—Winnipeg 1, St. James 1.

German Measles: Total 2—(Late Reported: Minto 1, St. Andrews 1).

Trachoma: Total 2—Rhineland 2.

Meningococcal Meningitis: Total 2—Unorganized 1 (Late Reported: Cypress North 1).

Anterior Poliomyelitis: Total 1—Ellice 1.

Puerperal Fever: Total 1—Winnipeg 1.

Treaty Indian Cases: Tuberculosis 15, Influenza 1, Measles 1, Pneumonia (Lobar) 1, Whooping Cough 1.

Veneral Disease: Total 118—Gonorrhoea 58, Syphilis 60.

DEATHS FROM COMMUNICABLE DISEASE

Division of Statistics, Manitoba, April, 1940

RURAL—Cancer 22, Influenza 14, Pneumonia (other forms) 11; Tuberculosis 10, Pneumonia Lobar 4, Whooping Cough 4, Measles 2, Diphtheria 1, Lethargic Encephalitis 1, other deaths under one year 24, other deaths over one year 157, Stillbirths 15. Total 265.

URBAN—Cancer 23, Tuberculosis 10, Influenza 8, Typhoid Fever 7, Pneumonia (other forms) 5, Syphilis 5, Measles 2, Pneumonia Lobar 2, Lethargic Encephalitis 1, other deaths under one year 8, other deaths over one year 138, Stillbirths 10. Total 219.

INDIANS—Tuberculosis 5, Pneumonia (other forms) 5, Pneumonia Lobar 2, Influenza 1, other deaths under one year 2, other deaths over one year 3, Stillbirths 1. Total 19.

BOOK REVIEW

SURGERY OF THE HAND by John Harold Couch, M.A., M.B., F.R.C.S. (Ed.). The University of Toronto Press, 1939, pp. 147.

Textbooks soon become outdated. Manuals on the various surgical subjects are always welcome to bring one up to date. Especially is this true for general practitioners and those who have been away from a teaching centre for a few years. This book on the hand by J. H. Couch is one that will be found useful and practical by all who read it. He does not give a great deal of anatomy, but presents the practical side of the subject. The outline at the beginning of each chapter is especially good and summarizes the material. The chapters deal with hand infections, nerve and tendon suture, amputations, and anaesthetics for operations on the hand. The chapter on the economic loss to the patient and to the Workmen's Compensation Board is very illuminating. One is amazed at the loss in time and money to patients who have injured and infected hands. The chapter on amputations is very practical and helpful and shows that the author has spent considerable thought on this aspect of surgery of the hand. Treatment of infections has been brought up to date and the improvements noted. The plate at the front of the book illustrates clearly what the author has in mind, namely, that the hand is a perfect and beautiful part of the human body, and any person treating affections of it should do so with the utmost skill.

—M.B.P.

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